

REMARKS

Reconsideration of the application is requested.

Claims 1 - 16 remain in the application. The claims have not been amended.

The withdrawal of the prior rejection is appreciated. We agree with the Examiner that the claims, as presently drawn, are patentable over the prior-cited references. We believe, however, that the claims are also patentable over the newly cited reference Fourie (US 4,671,576). Kindly consider the following arguments in support of patentability.

The invention of the instant application deals with the electro-dynamic braking of a rail vehicle. The acceleration (i.e., deceleration) depends on the velocity of the vehicle. The braking process is considered an acceleration with a negative value. According to claim 1, the *“acceleration is regulated to a set point acceleration which is proportional to the velocity.”* Claims 10 and 16 contain similar limitations, namely, the requirement that the set point acceleration be proportional to the velocity of the rail vehicle.

According to the prior art, the braking process is controlled so as to safely and reliably bring the rail vehicle to a stop. This is also the primary object of Fourie. There, the system is laid out so as to assure that the braking operation is dependably effected even when the wheels are subject to slippage on the rail.

In contrast, the object of the instantly claimed invention is to assure that, in the case of a regular braking operation, the passengers in the rail vehicle are not subjected to a violent jerk at the end of or shortly before the end of the braking process.

This object is achieved, according to the invention, by driving the acceleration (i.e., the value of acceleration) to a set point acceleration, which is proportional to the speed. It is thus the central concept of the invention not to brake with a constant amount of deceleration (i.e., constant negative acceleration). Instead, the system provides for a reduced set point acceleration as the speed is reduced, and the system drives the actual acceleration towards the set point acceleration. This non-constant set point deceleration – which is proportional to the speed – results in the final braking phases without a jolt.

Fourie does not utilize a set point acceleration that is proportional to the velocity and, accordingly, the reference does not utilize a closed-loop control process to drive the acceleration of the vehicle to an acceleration that is proportional to the velocity of the rail vehicle. Fourie, therefore, does not anticipate the claimed invention.

Fourie does not provide a solution to the above-noted object, nor does the reference deal with the same problem set. Fourie instead is concerned with detecting wheel slippage and with adapting the braking power to the wheel slippage. As stated by the reference,

the force exerted on the brake shoes 18 is controlled so that the sum of regenerative and frictional braking gives the greatest possible retardation rate within the constraints of the system.

Fourie, col. 5, lines 60-63 (emphasis added). Especially the underlined portion points to Fourie's primary concerns, namely, to maximize the value of the braking acceleration in accordance with what the system allows.

Fourie is concerned with wheel slippage and the object is to adapt the braking to the wheel slippage. The Examiner's cite to col. 6, lines 4-9, is acknowledged. There, Fourie explains how the acceleration of the vehicle is determined. For that purpose, a travel distance is measured and the value is differentiated twice. The first differentiation thereby results in the velocity ($dx/dt = v$). The second differentiation results in the acceleration ($dv/dt = a$). The fact that the acceleration is obtained by differentiating the velocity is simply a well known fact that represents a physical relationship.

The Examiner further points to col. 8, lines 32 et seq., and to col. 9, lines 1-39. There, there is explained that, once Fourie detects wheel slippage on the rails, the acceleration signal sent to the brake is changed. A generator 51 thereby stores the relationship between the adhesion of the wheels on the rails in dependence on the velocity of the vehicle. In addition, there is provided a slip detector 47. The output signals of the components 51 (R_M) and 71 (R'_M) thereby provide for the maximum deceleration that is possible without leading to slippage.

The maximum deceleration of Fourie is not proportional to the velocity of the vehicle. See, for example, the function illustrated within the component 51. Furthermore, the reference does not at all regulate the acceleration to a set point acceleration which is a function (i.e., any type of function) of the velocity. Instead, the values R_M and R'_M

of the prior art teaching only represent an acceleration threshold. The acceleration threshold is selected so as to avoid a slippage of the wheels on the rails.

In light of the divergent objects and of the divergent solutions, the reference Fourie cannot render the claimed invention obvious either.

The indicated allowability of claims 6, 7, 13, and 14 is appreciatively noted. We believe, however, that the independent claims are patentable over the art of record. We have, therefore, not rewritten the allowable claims in independent form at this time.

Neither Fourie nor any other reference, whether taken alone or in any combination, either show or suggest the features of claims 1, 10, or 16. These claims are, therefore, patentable over the art and since all of the dependent claims are ultimately dependent on an allowable claim, they are patentable as well. The allowance of claims 1-16 are solicited.

Respectfully submitted,

/Werner H. Stemer/
Werner H. Stemer
(Reg. No. 34,956)

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Lerner Greenberg Stemer LLP
P.O. Box 2480
Hollywood, Florida 33022-2480
Tel.: 954-925-1100
Fax: 954-925-1101